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Translation of patent application titled "Closure Cap / Verschlusskappe"

Certificate of Accuracy of Translation

I, Adelheid Kaspar, Frankfurter Ring 2-b, 80807 München, Germany, hereby declare that I am the translator of the document attached and certify that the following is a true translation to the best of my knowledge and belief.

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Closure Cap

The present invention relates to a closure cap for a container having an opening, a container having a closure cap and a method of manufacturing a closure cap.

Closure caps for containers are already known in various configurations. For example, closure caps are known that cover a container aperture for closing the container and are removed from the region of said aperture for opening the container aperture. Typical examples of this type are conventional screw tops, many of which have a screw thread which for closing is screwed together with a thread arranged in the region of a container aperture, generally at a container neck. As a rule, such configurations provide for the closure caps to be completely separated from the container when the container aperture is open. Examples of the use of such configurations include packages for personal hygiene articles such as toothpaste, shower gels, shampoos or the like, or packages for foodstuffs such as ketchup or the like.

Furthermore, closure caps are known in which the closure cap itself has another opening adapted to be opened and closed. Such closure caps are typically mounted in the region of a container aperture wherein in most cases medium can be discharged from the container simply by opening and closing the additional opening in the closure cap while the closure cap itself remains on the container. Examples of such types include hinged lids or similar parts. As mentioned above, many such closure caps are releasably fixed to the container such as to allow for example an easy refilling of the container. Examples of this kind of closure caps are also known from the field of packages for foodstuffs or hygiene articles.

Many known containers or arrangements of container with closure cap use sealing elements. Examples of sealing elements include cone arrangements or spherical seals. It is further known to

insert into the container aperture a separate insert which in turn has an opening for discharging medium from the container. Such inserts are configured such as to generate a substantially tight connection between the insert and the container such as to allow medium to be discharged from the container only via the opening provided in the insert. Said insert may then for example be provided with a screw-on or snap-on closure cap by means of which the opening in the insert or in the container, respectively, can be opened and closed.

The object of the present invention is to provide an operationally reliable closure cap which is inexpensive and simple in manufacture, and an arrangement of a container having a closure cap and a method of manufacturing a closure cap.

The object is solved by a closure cap according to claim 1. The container of the present invention or an arrangement of a container with a closure cap, respectively, is the object of claim 17. The method of the present invention is the object of claim 19. Preferred embodiments are objects of the subclaims.

The present invention proposes in particular a closure cap for a container having a container aperture.

The closure cap is structured such that it serves to release a container aperture for discharging medium from the container and to close it such as to substantially prevent a discharge of medium from the container. The closure cap can for example be such that the closure cap serves to release and close an opening provided in a container neck. We remark in this conjunction that "close" and "release" do not necessarily mean that the cross-section of the container opening is itself changed. Instead, closing and releasing is to be understood to mean that medium may or may not be discharged from the container or the unit container-closure.

The closure cap of the present invention comprises at least one circumferentially closed wall section. Said section extends in particular around a longitudinal axis of the closure cap.

The present invention further provides a fin sealing device having at least two fins spaced apart from one another in the axial direction of the closure cap and integrally connected to the closure cap.

The closure cap may in particular be provided with a retaining section that serves to retain it at a container. Such retaining section may for example be part of a snap-on closure or a screw-thread. It may also be provided that the fin sealing device is a retaining device or part of a retaining device. The term "retaining device" is in particular to be understood to mean that the retaining device - possibly in conjunction with a support provided at a container - results in that said closure cap - when positioned correspondingly - cannot detach from the container by its own weight. It may also be provided that the retaining device is such that a certain minimum force is required for detaching it from the container. A retaining device may also be a surface adapted to be frictionally connected with a surface area of the container or the container neck.

The closure cap preferably comprises a cap body and a hinged lid hinged to it. The closure cap may also be configured as a snap-on closure.

Said closure cap may in particular be such a type of a snap-on closure that - if it is screwed onto a container or a container neck, respectively - it releases a corresponding container aperture when the threaded connection is separated. Further, an additional opening may be provided in the closure cap which for example can be closed via a flap wherein said closure cap can be screwed onto a container neck or a container, respectively.

In a preferred embodiment, the closure cap comprises a flap hinged to a cap body by means of at least one film hinge. A different type of hinge may also be provided.

Several or all of the fins of the fin sealing device may form a closed circle. They may in particular be designed in a washer-type shape. Several or all of the fins of the fin sealing device may be identical in shape. They may, however, also have different shapes.

A preferred embodiment provides for several or all of the fins of the fin sealing device to be arranged substantially in parallel. They may also be arranged at an angle to one another. Preferably, the fin sealing device comprises two fins. However, the fin sealing device may also comprise three or four or five or more than five fins. Fins of the fin sealing device may be arranged at the same wall or at the same wall section, respectively. However, they may also be arranged at different wall sections located for example opposite each other. In a preferred embodiment, the fins of the fin sealing device extend substantially radially relative a longitudinal axis of the closure cap.

The closure cap may also be provided with a cap body having no additional flap. An example of this is a closure cap formed as a screw top having no additional discharge opening other than the container aperture.

The cap body may be provided with a cover plate in the region of its top end. Such cover plate may be shaped plane or non-plane and may be of even or varying thickness. Such cover plate is in particular a top cover plate. It may - although not necessarily - be the topmost cover of such a cap. For example in a closure cap with a lid hinged to the cap, a top cover plate may be provided having a discharge opening and being adapted to be closed with a lid arranged - in the closed state - above said cover plate.

Although the wording "in the region of its top end" does not require the cover plate to actually be the topmost end, this is another preferred variant.

A preferred embodiment provides a first wall that is circumferentially closed and extends around a longitudinal axis or longitudinal central axis, respectively, of the closure cap, from which wall several fins extend substantially radially. The fins may be configured to extend radially inwardly of said wall or radially outwardly. The first wall may for example extend concentrically relative the central axis. The wall may be provided to extend as far as a top cover plate. Such a configuration may in particular provide for the circumferentially closed first wall to be entirely circumferentially closed between said fins and the top cover plate.

The first wall may for example be cylindrical in contour. It may also comprise - in particular viewed in the longitudinal direction of the closure cap - diverting sections. The first wall may in particular be designed cylindrical in contour, followed by a section diverted by 180 degrees, this in turn followed by another cylindrical section. Said further cylindrical section may for example be provided with fins. Other designs are also preferred. A preferred embodiment provides a first channel open at its bottom end, and extending radially inside said first wall in the longitudinal direction of the closure cap. The bottom end is in particular understood to be the end on the container side when the closure cap is positioned at or attached to the closure cap.

A preferred embodiment provides a top cover plate in the closure cap having a discharge opening connecting to the first channel.

It is further preferred that the closure cap comprises multiple radially distanced walls. Such walls may for example be arranged concentric relative to one another. Such walls may be

cylindrical or otherwise in shape. The closure cap may also be provided with three walls extending substantially in the longitudinal direction of the closure cap and being radially spaced apart. Such walls may extend around a longitudinal central axis of the closure cap. They may be arranged at equal or different angles to one another relative such a longitudinal central axis. Their path in the longitudinal direction of the closure cap may run in a straight or curved or any other line. It is particularly preferred to provide two radially distanced walls, one of which has substantially radially extending fins of the fin sealing device and distanced such as to allow the neck of a container to be received between said walls such that the fins are supported by said neck over the entire circumference.

It is further preferred to provide the closure cap with a thread or a threaded section by means of which the closure cap can be coupled to a container, in particular releasably. Other coupling mechanisms allowing a releasable connection between the closure cap and a container are also preferred. The closure cap can in particular be provided with a snap-on closure or a part of a snap-on closure. A counterpart of such a snap-on closure can for example be provided at the container or the container neck, respectively.

A preferred embodiment provides two radially distant walls of the closure cap extending substantially in the longitudinal direction of the closure cap and in whose gap - as described above - the neck of a container can be received. It is particularly preferred to provide such a configuration with fins of the fin sealing extending from the one of said walls on the side facing the other wall. According to a particularly preferred embodiment, a screw thread or a threaded section is provided on the other wall. Said other wall is particularly preferably the one radially further outward.

A screw-thread or threaded section may also be provided at a wall extending substantially in the longitudinal direction of

the closure cap and fins of the fin sealing device may be provided at the same wall. This may in particular be such that the fins are located above said screw-thread or threaded section.

The screw thread may be an internal or external thread.

Preferably the closure cap is entirely formed integrally.

Preferably the fins consist of elastic material. The fins are preferably made of plastics. It is particularly preferred that the entire closure cap consists of plastics. It may be of the same plastics or of different plastics. Preferably it consists of plastics suitable for injection molding. It is particularly preferred that the closure cap and/or the fins are made of a thermoplastic elastomer (TPE) or of polypropylene (PP) or of polyethylene (PE) or of combinations of said plastics.

The fins are preferably of solid material; however they may also be hollow.

The closure cap is preferably a hinged cover or a screw top.

The object is further solved by a container according to claim 17.

The present invention particularly provides a container for receiving a medium. Such medium may for example be a liquid. A particularly preferred embodiment provides for a viscous or highly viscous medium. It may, however, be provided that such medium is bulk goods.

The medium may in particular be a shower gel or a shampoo or ketchup or the like.

The container comprises a container aperture which can be opened and closed by means of the closure cap.

It may be provided that the closure cap is placed at the container - for example detachably placed - and that it comprises a further aperture having a closure mechanism for said aperture. It may for example be provided that said aperture can be opened and closed by means of a pivotable lid hinged to the closure cap.

The closure cap is in particular configured as described within the scope of the present disclosure.

It may be provided that the container and the closure cap each comprise a retaining mechanism or retaining region, respectively - of similar or different configuration - wherein said retaining regions or retaining mechanisms cooperate or are configured to cooperate in retaining the closure cap at the container.

It is particularly preferred that the container comprises a container neck. Said neck may in particular project from the container surface. A container neck may be formed such as to extend from the outer surface of the container toward the inside of the container. It may also be provided that the closure cap is detachably fixed to such container neck or in the region of such container neck.

A preferred embodiment provides for the fins of the fin sealing device of the closure cap to abut the outer surface and/or the inner surface of a neck of a container, namely, around the entire circumference.

The object is further solved by the method of claim 19.

The present invention in particular provides a method of manufacturing an integral closure cap. This closure cap may for example be a closure cap as described in various configurations within the scope of the present disclosure.

The method of the present invention provides for the closure cap to be manufactured by injection molding. It is in particular provided that first, a partial element of the closure cap is manufactured by injection molding, and subsequently a fin sealing device having at least two fins is integrally injection-molded onto said partial element. It may be provided that after the fins have been injection-molded onto said element, further elements are also integrally injection-molded onto the closure cap.

It may also be provided that the fins are molded on after all the other elements of the integral closure cap have been injection-molded. It may also be provided that a portion of the closure cap is manufactured separately and further parts or portions are injection-molded onto the integral closure cap being formed. It is in particular provided in such a configuration that the fins (fin sealing device) are injection-molded onto the product.

Reference is made to the fact that the present invention is not meant to be limited to and by the exemplary and preferred embodiments.

A number of exemplary aspects of the present invention shall be described below with respect to the drawings whereby the invention is not meant to be limited.

The drawings show in:

Fig. 1 a schematic view of an exemplary closure cap of the invention;

Fig. 2 a schematic view of an exemplary container of the invention with an exemplary closure cap of the invention;

Fig. 3 a schematic view of an exemplary container of the invention with an exemplary closure cap of the invention;

Fig. 4 a schematic view of an exemplary container of the invention with an exemplary closure cap of the invention;

Fig. 5 a schematic view of an exemplary container of the invention with an exemplary closure cap of the invention;

Fig. 6 a schematic view of an exemplary container of the invention with an exemplary closure cap of the invention; and

Fig. 7 a schematic view of an exemplary container of the invention with an exemplary closure cap of the invention.

Fig. 1 shows a schematic view of an exemplary closure cap 1 of the invention.

The closure cap 1 shown in Fig. 1 is configured entirely integrally and comprises a closure cap body 10 to which a closure cap lid 12 is hinged via a joint configured as a film hinge 14.

The closure cap body 10 is equipped with a top cover or top cover plate 16, respectively. A closure cap aperture 18 is provided in said top cover plate 16. The aperture 18 is limited in its circumference by a wall section 20 that, viewed in the direction of the central longitudinal axis 22 of the closure cap, projects upwardly and downwardly from the cover plate 16. It may also be provided that such wall section 20 projects only upwardly or only downwardly or not at all from the cover plate 16.

Reference is made to the fact that "downwardly" of the closure cap means - if said closure cap is arranged on a container - the direction toward the container while "upwardly" means the opposite direction - i.e. away from the container.

In the configuration of Fig. 1, said wall section 20 tapers downwardly, approximately conically.

The configuration of Fig. 1 provides a substantially annular projection 24 on the inside of the lid which with the lid closed is, in particular tightly, supported on the top end of the wall section 20. Said configuration may also provide that such projection 24 is formed as a projecting plate or that no projection is provided and the inside of the lid - with no projection provided - is supported on the top end of the wall section 20.

Furthermore, a retaining mechanism may be provided, indicated schematically by the reference number 26, which retains the cap lid 12 in its closed position relative the closure cap body 10. In the configuration of Fig. 1, a first wall 28 extends downwardly from the top cover plate 16. In the configuration of Fig. 1, said wall 28 is substantially cylindrical in shape and positioned concentric relative the central longitudinal axis 22. On the radially outward surface of said first wall 28, fins 30, 32 are provided which are circumferentially closed and project radially from said wall 28. The configuration of Fig. 1 provides two such fins. The fins 30, 32 are axially spaced apart from one another in the axial direction respectively in the direction determined by the central longitudinal axis 22. Said wall 28 is circumferentially entirely closed between said fins 30, 32 respectively between the lower of said fins 32 and the cover plate 16.

The configuration according to Fig. 1 further provides a second wall 34 extending around the central longitudinal axis 22, namely radially outside said first wall 28.

In the configuration according to Fig. 1 said second wall 34 is cylindrical in shape and extends downwardly from the cover plate 16 substantially concentrically relative the central axis 22. In the configuration according to Fig. 1 said first wall 28 extends further downwardly than said second wall 34.

Radially between the first wall 28 and the second wall 34 a gap is formed where a container neck of a container can be received. The fins 30, 32 - when mounted correspondingly - rest against such a container neck or against the inner wall of the container neck or of the container.

Radially inside the first wall 28 a second gap is provided respectively a channel 38 is formed. The aperture 18 connects to said channel 38. The wall 28 is open at the bottom so that, with a closure 1 mounted on a container, medium can pass from the container via the channel 38 to the aperture 18.

The aperture 18 in the configuration according to Fig. 1 is positioned concentric relative the central longitudinal axis 22, it may however also be positioned non-concentric.

In the configuration according to Fig. 1, there is further provided a third wall section 40 extending substantially in the direction of the central longitudinal axis 22 respectively runs downward at an angle to said longitudinal axis. The wall section 40 in the configuration according to Fig. 1 is positioned concentric relative the central longitudinal axis 22 or the first wall 28, respectively, and/or the second wall 34.

Fig. 2 shows an exemplary configuration of a container 50 of the invention with an exemplary closure cap 1 of the invention.

The closure cap shown in Fig. 2 differs from that shown in Fig. 1 substantially in that in the configuration according to Fig. 2, a retaining mechanism 26 is absent in the region of the lid facing away from the hinge 14; such a retaining mechanism may, however, be present in the configuration according to Fig.

2. The closure cap 1 shown in Fig. 2 further differs from that shown in Fig. 1 in that in the configuration of Fig. 2, an annular projection is absent which, with the lid 12 closed, is supported on the top surface of the cover lid 16 or the top end of the wall section 20, respectively.

Instead, in the configuration shown in Fig. 2, a plug 52 is provided extending from the bottom face of the lid 12 and, with the lid closed, into the closure cap aperture 18, in particular acting as a seal. The plug 52 may for example be cone-shaped.

The container shown in Fig. 2 comprises exactly one container aperture 54. However, such a container 50 can generally be provided with multiple container apertures.

In the region of the container aperture 54 the container 50 further comprises a container neck 56. Said container neck 56 is substantially cylindrical in shape and extends into the radial gap 36 between the first wall 28 and the second wall 34. The configuration shown in Fig. 2 provides that the fins 30, 32 rest against the inner wall of the container neck 56. With this configuration, the inner surface of the second wall 34 further rests against the outer surface of the container neck 56. With this structure, a gap or play may be present. The fins 30, 32 rest against the inner wall or inner surface of the container neck.

In the configuration of Fig. 2, the inner surface of the second wall 34 and the outer surface of the container neck 56 are substantially non-profiled in shape. However, a profiled shape, in particular a screw thread, may be provided as well.

Fig. 3 shows another exemplary embodiment of a container 50 of the invention with an exemplary closure cap of the invention in a schematic view.

In the configuration shown in Fig. 3, an external thread 60 provided on the outer surface of the container neck 56 engages

with an internal thread 62 provided on the inner surface of the second wall 34. A third wall 40 arranged radially outwardly of said second wall is absent in the configuration according to Fig. 3, it may, however, be provided.

In the configuration shown in Fig. 3, three peripheral fins 30, 32, 64 are further provided. This is also meant to serve as an example only; only two fins may as well be provided, just as four, five or more than five fins may be provided. In the configuration shown in Fig. 3, said fins also abut the inner surface of the container neck 56.

In the configuration according to Fig. 3, the closure cap 1 comprises a plug 52 arranged at the inside of the lid 12. In this exemplary configuration, there is no wall section 20 projecting upwardly and downwardly from the top cover plate 16 in the region of the closure cap aperture 18 - unlike the configuration of Fig. 2. It may be provided that the plug 52 - in particular in conjunction with the aperture 18 - acts both as a seal and a retaining element. This may also be provided in the configuration according to Fig. 2.

Fig. 4 shows another exemplary configuration of a container 50 of the invention with an exemplary closure cap 1 of the invention.

The closure cap 1 in its configuration according to Fig. 4 differs from the closure cap shown in Fig. 3 substantially in that it is not provided with a closure cap aperture 18 but that the top cover plate - at least in the region enveloped by the first wall 28 - is free of a closure cap aperture nor does it comprise a closure cap lid 12 joined via a hinge 14. The exemplary configuration shown in Fig. 4 of a closure device of the present invention is thus a screw-only top which can be screwed via a thread 62 to a thread 60 arranged at the container neck.

Instead of such a thread, a different retaining mechanism may be provided. It is conceivable that the inner surface of the second wall 34 and the outer surface of the container neck 56 are as shown in Fig. 2.

Fig. 5 shows an exemplary container of the invention with an exemplary closure cap 1 of the invention in a schematic view.

The container 50, as is the container 50 shown in Fig. 4, is provided on the outer surface of the container neck 56 with an external thread 60 that engages with an internal thread 62 of the closure cap 1. However, while in the configuration shown in Fig. 4, said external thread 60 extends substantially as far as to the top end of the container neck 56, the configuration shown in Fig. 5 provides an unthreaded region on the outer surface of the container neck above the external thread 60 where it abuts the (sealing) fins 30, 32 arranged at the closure cap 1. Such a region may as well be provided below the external thread 60, in particular at a projection projecting radially outwardly wherein the fins may for example be arranged at a radial recess in the wall 70.

Said (sealing) fins 30, 32 that in the configuration of Fig. 4 are provided on the outer surface of a wall 28 extending in the longitudinal direction of the closure cap, are, in the configuration of Fig. 5, arranged on the inner surface of a wall 70 extending around the central longitudinal axis 22 and extend from there radially inwardly.

The closure cap 1 comprises in the configuration of Fig. 5 only one wall 70 extending substantially around the longitudinal axis 22.

The container 50 shown in Fig. 6 substantially corresponds to that shown in Fig. 5. The closure cap 1 shown in Fig. 6 differs from that shown in Fig. 5 substantially in that the cap shown in Fig. 6 has a discharge aperture 18 in the top cover plate and a hinged lid 12 joined via a hinge, in particular a

film hinge 14, for opening and closing the discharge aperture 18.

Fig. 7 shows a container 50 having a closure cap 1. The container 50 differs from that shown in Fig. 2 in that the container neck 56 has a thread 60 on its outer surface which can be screwed to an internal thread 62 provided at the lid 12.

The closure cap 1 shown in Fig. 7 differs from the closure cap 1 shown in Fig. 2 in particular in that the second wall 34 comprises an internal thread 62 and in that a hinged lid 12 is absent and the top cover plate 16 has no passageway 18.

However, the configuration shown in Fig. 7 can - as shown in Fig. 2 - be designed without a thread 60, 62, and the configuration shown in Fig. 2 can be designed with a thread 60, 62.